

## CLAIMS

What is claimed is:

1. A computer-implemented method of indicating a failover data path in a graphical user interface environment, said method comprising:
  - 5 graphically displaying at least one source device;
  - graphically displaying at least one target device;
  - graphically displaying a first data path between at least one source device and at least one target device; and

in response to a failure in the first data path:
  - 10 graphically indicating the failure in the first data path; and
  - graphically displaying a failover data path.
2. The method of Claim 1, wherein:
  - 15 said graphically displaying at least one source device comprises graphically displaying at least one component of at least one application host; and
  - said graphically displaying at least one target device comprises graphically displaying at least one component of at least one storage system.
3. The method of Claim 1, wherein:
  - 20 said graphically indicating the failure in the first data path comprises eliminating the graphical display of the first data path.
4. The method of Claim 1, wherein:

10 said graphically displaying the first data path comprises displaying a first link between at least one source device and at least one target device, and animating the first link to indicate that the first data path has not failed.

15 5. The method of Claim 4, wherein:

10 said graphically indicating the failure in the first data path comprises one of the group consisting of:

15 ceasing the display of the first link;  
displaying a red-colored portion on the first link; and  
displaying the first link using a broken line.

20 6. The method of Claim 1, further comprising:

25 graphically displaying a second data path between at least one source device and at least one target device.

30 7. The method of Claim 6, wherein:

35 said graphically displaying at least one source device comprises graphically displaying two source devices;

40 said graphically displaying at least one target device comprises graphically displaying two target devices;

45 said graphically displaying the first data path comprises graphically displaying the first data path between a first of the two source devices and a first of the two target devices; and

50 said graphically displaying the second data path comprises graphically displaying the second data path between a second of the two source devices and a second of the two target devices.

8. The method of Claim 7, wherein

5 said graphically displaying the two source devices comprises displaying a graphical representation of at least two host adapters; and

10 said graphically displaying the at least two target devices comprises displaying a graphical representation of at least two storage units.

9. The method of Claim 7, wherein:

15 said graphically displaying the failover data path comprises displaying a third link between the first target device and the second target device.

10. The method of Claim 9, wherein:

20 said graphically displaying the failover data path further comprises animating the third link to indicate that the third link is being used as a failover path.

11. An apparatus for managing the display of a plurality of data paths in a graphical user interface environment, comprising:

25 a memory having program instructions;

graphically display at least one source device;

graphically display at least one target device;

graphically display a first data path between at least one source device and at least one target device; and

in response to a failure in the first data path:

graphically indicate the failure in the first data path; and

graphically display a failover data path.

12. The apparatus of Claim 11, wherein:

5 said graphically displaying at least one source device comprises graphically displaying at least one component of at least one application host; and

10 said graphically displaying at least one target device comprises graphically displaying at least one component of at least one storage system.

13. The apparatus of Claim 11, wherein:

15 said graphically indicating the failure in the first data path comprises eliminating the graphical display of the first data path.

14. The apparatus of Claim 11, wherein:

20 said graphically displaying the first data path comprises displaying a first link between at least one source device and at least one target device, and animating the first link to indicate that the first data path has not failed.

15 15. The apparatus of Claim 14, wherein:

25 said graphically indicating the failure in the first data path comprises one of the group consisting of:

displaying a red-colored portion on the first link; and

displaying the first link using a broken line.

16. The apparatus of Claim 11, further comprising:

25 graphically displaying a second data path between at least one source device and at least one target device.

17. The apparatus of Claim 16, wherein:

5 said graphically displaying at least one source device comprises graphically displaying two source devices;

10 said graphically displaying at least one target device comprises graphically displaying two target devices;

15 said graphically displaying the first data path comprises graphically displaying the first data path between a first of the two source devices and a first of the two target devices; and

20 said graphically displaying the second data path comprises graphically displaying the second data path between a second of the two source devices and a second of the two target devices.

18. The apparatus of Claim 17, wherein

25 said graphically displaying the two source devices comprises displaying a graphical representation of at least two host adapters; and

30 said graphically displaying the at least two target devices comprises displaying a graphical representation of at least two storage units.

19. The apparatus of Claim 17, wherein:

35 said graphically displaying the failover data path comprises displaying a third link between the first target device and the second target device.

20. The apparatus of Claim 19, wherein:

40 said graphically displaying the failover data path further comprises animating the third link to indicate that the third link is being used as a failover path.

21. A method of operating a storage system, comprising:

transmitting data from at least one application host to at least one storage system along a first data path;

graphically displaying at least one component of at least one application host in a graphical user interface environment;

5 graphically displaying at least one component of at least one storage system in the graphical user interface environment;

graphically displaying the first data path in the graphical user interface environment; and

in response to a failure in the first data path:

transmitting data from the application host to the storage system along a failover data path;

graphically indicating the failure in the first data path in the graphical user interface environment; and

graphically displaying the failover data path in the graphical user interface environment.

22. The method of Claim 21, wherein:

said graphically indicating the failure in the first data path comprises eliminating the graphical display of the first data path.

20 23. The method of Claim 21, wherein:

said graphically displaying the first data path comprises displaying a first link between at least one component of at least one application host and at least one component of at least one storage system, and animating the first link to indicate that the first data path has not failed.

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24. The method of Claim 23, wherein:

said graphically indicating the failure in the first data path comprises one of the group consisting of:

ceasing the display of the first link;  
displaying a red-colored portion on the first link; and  
displaying the first link using a broken line.

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25. The method of Claim 21, further comprising:

transmitting data from at least one application host to at least one storage system along a second data path; and

graphically displaying the second data path in the graphical user interface environment.

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26. The method of Claim 25, wherein:

said graphically displaying at least one component of at least one application host comprises graphically displaying two components of an application host;

said graphically displaying at least one component of at least one storage system comprises graphically displaying two components of a storage system;

said graphically displaying the first data path comprises graphically displaying the first data path between a first of the two components of the application host and a first of the two components of the storage system; and

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said graphically displaying the second data path comprises graphically displaying the second data path between a second of the two components of the application host and a second of the two components of the storage system.

27. The method of Claim 26, wherein

25 said graphically displaying the two components of the application host comprises displaying a graphical representation of two host adapters; and

said graphically displaying the two components of the storage system comprises displaying a graphical representation of two storage units.

28. The method of Claim 26, wherein:

    said graphically displaying the failover data path comprises displaying a third link between the first component of the storage system and the second component of the storage system.
29. The method of Claim 28, wherein:

    said graphically displaying the failover data path further comprises animating the third link to indicate that the third link is being used as a failover path.
30. A computer-readable medium containing instructions for indicating a failover data path in a graphical user interface environment, wherein said instructions cause operations to be performed comprising:

        rendering a graphical representation of at least one source device on a computer display;

        rendering a graphical representation of at least one target device on the computer display;

        rendering a graphical representation of a first data path between at least one source device and at least one target device; and

        in response to a failure in the first data path:

            graphically indicating the failure in the first data path; and

            rendering a graphical representation of a failover data path.
31. The computer-readable medium of Claim 30, wherein:

5 said rendering the graphical representation of at least one source device comprises rendering the graphical representation of at least one component of at least one application host; and

10 said rendering the graphical representation of at least one target device comprises rendering the graphical representation of at least one component of at least one storage system.

15 32. The computer-readable medium of Claim 30, wherein:

20 said graphically indicating the failure in the first data path comprises eliminating the graphical representation of the first data path.

25 33. The computer-readable medium of Claim 30, wherein:

30 said rendering the graphical representation of the first data path comprises displaying a first link between at least one source device and at least one target device, and animating the first link to indicate that the first data path has not failed.

35 34. The computer-readable medium of Claim 33, wherein:

40 said graphically indicating the failure in the first data path comprises one of the group consisting of:

45 ceasing the display of the first link;

displaying a red-colored portion on the first link; and

displaying the first link using a broken line.

50 35. The computer-readable medium of Claim 30, wherein said instructions cause further operations to be performed, comprising:

55 rendering a graphical representation of a second data path between at least one source device and at least one target device.

36. The computer-readable medium of Claim 35, wherein:

5 said rendering the graphical representation of at least one source device comprises rendering the graphical representation of two source devices;

10 said rendering the graphical representation of at least one target device comprises rendering the graphical representation of two target devices;

15 said rendering the graphical representation of the first data path comprises rendering the graphical representation of the first data path between a first of the two source devices and a first of the two target devices; and

20 said rendering the graphical representation of the second data path comprises rendering the graphical representation of the second data path between a second of the two source devices and a second of the two target devices.

37. The computer-readable medium of Claim 36, wherein

25 said rendering the graphical representation of the two source devices comprises displaying the graphical representation of at least two host adapters; and

30 said rendering the graphical representation of the at least two target devices comprises displaying the graphical representation of at least two storage units.

20 38. The computer-readable medium of Claim 36, wherein:

35 said rendering the graphical representation of the failover data path comprises displaying a third link between the first target device and the second target device.

25 39. The computer-readable medium of Claim 38, wherein:

40 said rendering the graphical representation of the failover data path further comprises animating the third link to indicate that the third link is being used as a failover path.